PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0542-01-CT
Application for Renewal No. 0542-05
Application for Significant Modification No. 0542-06

Company: Black Maui Rose, LLC

Mailing Address: P.O. Box 579
Honolulu, Hawaii 96809

Facility: 300 TPH Portable Drum Mix Asphalt Plant

Location: Various Temporary Sites, State of Hawaii

Initial Location: 91-047 Hanua Street, Kapolei, Oahu

SIC Code: 2951 (Asphalt Paving Mixtures and Blocks)

Responsible Official: Mr. John Romanowski
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PROPOSED PROJECT

Black Maui Rose, LLC has submitted permit applications for renewal and significant modification. Black Maui Rose is proposing to install a 1,093 bhp diesel engine generator as the primary power source for its asphalt concrete plant. The existing 1,085 bhp diesel engine generator will revert to an emergency role. The combined fuel consumption of the proposed generator and existing generator will be subject to the existing fuel limit of 159,000 gallons in any rolling 12-month period.

There are no other proposed changes to existing equipment in the design or operation of the facility.

EQUIPMENT DESCRIPTION

Facility Equipment				
Equipment	Manufacturer	Model No.	Serial No.	Manuf. Date
300 TPH Drum Mixer	CMI Corp.	PTD-300	145	2003
Burner	Hauck	Eco-Star II		2003
Baghouse for Drum Mixer	CMI Corp.	RA318P	RA318PTD0233	2003
1,093 bhp DEG	Caterpillar	C-27	ZRS00308	
1,085 bhp emergency DEG	Cummins	QST30-G2	37208737	2003
Hot Oil Heater	CMI Corp.	CEI-2000	CO3-056	2003
4' x 10' Scalping Screen	CMI Corp.	PC-30X47	337	2003
10' x 14' Aggregate Bin	CMI Corp.	PAB-432	233	2003
300 TPH Lime Feeder System:				
3,500 Gal Tank & Pugmill	CMI Corp.	PMS303530	117	2006
Portable Self-erect Silo	CMI Corp.	MFS-350PSE	108	2006
Baghouse	CMI Corp.	PJ-159		2006
300 TPH RAP Bin/Crusher	Terex	RB120P	206	1/15/2010

AIR POLLUTION CONTROLS

Drum Mixer
The drum mixer/dryer is equipped with a baghouse to control PM emissions.

Lime Feeder System
The lime feeder storage silo is equipped with a baghouse that operates passively without an exhaust fan to control PM emissions. The weigh pod, auger and pug mill are enclosed.

Fugitive Emissions
Fugitive emissions due to aggregate processing and unpaved roads will be controlled by water suppression, as necessary.

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)
Title 11 Chapter 59, Ambient Air Quality Standards
Title 11 Chapter 60.1, Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31, Applicability
  - 11-60.1-32, Visible Emissions
  - 11-60.1-33, Fugitive Dust
  - 11-60.1-38, Sulfur Oxides from Fuel Combustion
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111, Definitions
  - 11-60.1-112, General Fee Provisions for Covered sources
  - 11-60.1-113, Application Fees for Covered sources
  - 11-60.1-114, Annual Fees for Covered sources
  - 11-60.1-115, Basis of Annual Fees for Covered Sources

Subchapter 8, Standards of Performance for Stationary Sources
11-60.1-161, New Source Performance Standards
Subchapter 9, Hazardous Air Pollutant Sources
Subchapter 10, Field Citations

Standard of Performance for New Stationary Sources (NSPS), 40 Code of Federal Regulations (CFR) Part 60
Subpart I - Standards of Performance for Hot Mix Asphalt Facilities is applicable to the drum mix asphalt plant because the facility commenced construction or modification after June 11, 1973.

Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the RAP bin/crusher, associated conveyors, and any other affected facility (as defined in 40 CFR §60.670 for hot mix asphalt facilities) because the maximum capacity of the facility is greater than 150 tons/hour, and the equipment was manufactured after August 31, 1983. Equipment that commence construction, modification, or reconstruction on or after April 22, 2008, have more stringent fugitive emission opacity limits.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable to the 1,093 bhp Caterpillar diesel engine generator because the engine commenced construction after July 11, 2005, and was manufactured after April 1, 2006. For purposes of Subpart IIII, the date that construction commences is the date the engine is ordered. The engine is Tier 4 interim certified.

Subpart IIII is not applicable to the 1,085 bhp emergency Cummins diesel engine generator because the engine was manufactured before April 1, 2006.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61
This source is not subject to NESHAPs because there are no standards in 40 CFR Part 61 applicable to this facility.

NESHAPs for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63
Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is applicable to the 1,093 bhp Caterpillar diesel engine generator because the engine is a new stationary RICE. A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary rice on or after June 12, 2006. A new stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply for such engines under this part.

Subpart ZZZZ is applicable to the 1,085 bhp emergency Cummins diesel engine generator because the engine is an existing emergency stationary RICE. The emergency generator shall meet the definition of an emergency stationary RICE as defined in 40 CFR §63.6675. Requirements including installing and operating a non-resettable hour meter, performing and documenting regular maintenance and inspections according to Table 2d of Subpart ZZZZ, and following the provisions for emergency stationary RICE in accordance with 40 CFR §63.6640(f).

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21
This source is not subject to PSD requirements because it is not a major stationary source as defined in 40 CFR §52.21 and HAR, Title 11, Chapter 60.1, Subchapter 7.

Compliance Assurance Monitoring (CAM), 40 CFR 64
This source is not subject to CAM because the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Air Emissions Reporting Requirements (AERR), 40 CFR Part 51, Subpart A
AERR is not applicable because potential emissions from the facility do not exceed AERR thresholds.

DOH In-house Annual Emissions Reporting
The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)
This source is not subject to BACT analysis because potential emissions due to the modification (1,093 bhp diesel engine generator) are below significant levels. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

BACT		
Pollutant	Potential Emissions (TPY)	Significant Levels (TPY)
CO	3.5	100
NO_X	8.3	40
SO_2	0.02	40
PM	0.3	25
PM-10	0.3	15
VOC	0.4	40

Synthetic Minor Source
A synthetic minor source is a facility that is potentially major, as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is a synthetic minor source because potential CO, NO_X ,SO_2, and PM emissions exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

45 ekW Stamford Diesel Engine Generator (serial no. C950572202)
The diesel engine generator is considered an insignificant activity in accordance with HAR 11-60.1-82(f)(2) because its heat input capacity is less than one (1) MMBtu/hr.

Storage Tanks
The following storage tanks are less than 40,000 gallons and are considered insignificant activities in accordance with HAR 11-60.1-82(f)(1):

1. 8,000 gallon fuel oil storage tank for the drum mixer.
2. 8,000 gallon used oil storage tank for the drum mixer.
3. 8,000 gallon fuel oil storage tank for the diesel engine generator.

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine Generators
The permittee may replace each diesel engine generator with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel engine from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

PROJECT EMISSIONS

Diesel Engine Generators
The diesel engine generators are fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. The total combined fuel consumption of the diesel engine generators is limited to 159,000 gallons in any rolling 12-month (12-month) period. Emissions were based on manufacturer's data. SO_2 and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) – Large Stationary Diesel and All Stationary Dual-fuel Engines.

1,093 bhp Caterpillar Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [159,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	2.4	3.5	10.3
NO_X	5.6	8.3	24.4
SO_2	0.01	0.02	0.05
PM	0.2	0.3	0.9
PM-10	0.2	0.3	0.9
PM-2.5	0.2	0.3	0.8
VOC	0.3	0.4	1.2
HAPs	0.01	0.02	0.05

1,085 bhp Emergency Cummins Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [159,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	1.0	1.4	4.2
NO_X	15.1	22.6	66.0
SO_2	0.01	0.02	0.05
PM	0.2	0.4	1.0
PM-10	0.2	0.3	1.0
PM-2.5	0.2	0.3	0.9
VOC	0.4	0.5	1.6
HAPs	0.01	0.02	0.05

300 TPH Drum Mixer/Dryer

The drum mixer/dryer is fired on fuel oil no. 2 and spec used oil with a maximum sulfur content of 0.5% by weight. Emissions were based on emission factors from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants. Fuel consumption limit = 714 gal/hr x 3,000 hr/yr = 2,142,000 gal/yr.

300 TPH Drum Mixer/Dryer			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	39.0	58.5	170.8
NO_X	16.5	24.8	72.3
SO_2	26.2	39.4	114.9
PM	9.9	14.9	43.4
PM-10	6.9	10.4	30.2
PM-2.5	6.6	9.9	28.9
VOC	9.6	14.4	42.0
HAPs	3.15	4.73	13.80

HMA Silo Filling and Truck Load-Out Operations

Emissions for HMA silo filling and truck load-out operations were based on emission factors from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants.

HMA Silo Filling Operation		
Pollutant	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.5	1.6
PM	0.3	0.8
PM-10	0.3	0.8
PM-2.5	0.3	0.8
VOC	5.5	16.0
HAPs	0.08	0.25

HMA Truck Load-Out Operation		
Pollutant	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.6	1.8
PM	0.2	0.7
PM-10	0.2	0.7
PM-2.5	0.2	0.7
VOC	1.8	5.1
HAPs	0.04	0.11

Hot Oil Heater

The hot oil heater is fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. Emissions were based on emission factors from AP-42 Section 1.3 (5/10) – Fuel Oil Combustion.

Hot Oil Heater			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [60,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.1	0.2	0.4
NO_X	0.4	0.6	1.8
SO_2	1.4	2.1	6.2
PM	0.0	0.1	0.2
PM-10	0.0	0.0	0.1
PM-2.5	0.0	0.0	0.1
VOC	0.0	0.0	0.0
HAPs	0.001	0.002	0.006

300 TPH Lime Feeder System

The lime feeder storage silo is equipped with a baghouse to control PM emissions and the rest of the system is enclosed. Emissions were based on emission factors from AP-42 Section 11.12 (1/12) – Concrete Batching.

300 TPH Lime Feeder System	
Pollutant	Emissions (TPY) [8,760 hr/yr]
PM	1.0
PM-10	0.6
PM-2.5	0.1

Fugitive Emissions

Emissions due to aggregate and RAP processing, wind erosion from storage piles, and truck travelling on unpaved roads are summarized in the tables below. Hot mix asphalt is made up of 95% aggregate and RAP. 70% control efficiency was assumed for water suppression for trucks travelling on unpaved roads. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing, Section 8.19.1 (4th ed.) - Sand and Gravel Processing, and Section 13.2.2 (11/06) – Unpaved Roads.

Aggregate Handling		
Pollutant	Emissions (TPY) [855,000 ton/yr]	Emissions (TPY) [8,760 hr/yr]
PM	15.8	48.7
PM-10	5.6	17.2
PM-2.5	2.4	7.3

RAP Processing		
Pollutant	Emissions (TPY) [855,000 ton/yr]	Emissions (TPY) [8,760 hr/yr]
PM	4.9	15.0
PM-10	2.0	6.1
PM-2.5	0.7	2.3

Wind Erosion from Storage Piles		
Pollutant	Emissions (TPY) [855,000 ton/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.1	0.1
PM-10	0.1	0.1
PM-2.5	0.0	0.0

Vehicle Travel on Unpaved Roads		
Pollutant	Emissions (TPY) [900,000 ton/yr]	Emissions (TPY) [8,760 hr/yr]
PM	25.4	74.2
PM-10	6.2	18.1
PM-2.5	0.6	1.8

Greenhouse Gas (GHG) Emissions

Total GHG emissions are summarized in the table below:

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO_2e Based Emissions (TPY)
Carbon Dioxide (CO_2)	1	17355.45	17355.5
Methane (CH_4)	25	5.62	140.4
Nitrous Oxide (N_2O)	298	0.22	65.8
Total Emissions:			17561.7

Total Emissions

Total facility emissions are summarized in the table below. The worst case emissions between the diesel engine generators were used.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (With Limits)	Emissions (No Limits)	BACT Significant Levels	AERR Thresholds	DOH Levels
CO	63.3	184.9	100	1000	250
NO_X	48.0	140.0	40	100	25
SO_2	40.0	116.7	40	100	25
PM	63.0	185.0	25	-	25
PM-10	25.7	74.9	15	100	25
PM-2.5	14.6	42.9	10	100	-
VOC	22.2	64.8	40	100	25
HAPs	4.87	14.22	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) was conducted for the proposed 1,093 bhp diesel engine generator to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, Version 8.7.0, was used for the modeling analysis.

Terrain
Terrain data from the USGS National Elevation Dataset with resolution of 1/3 arc-second (about ten (10) meters).

Meteorological data
Meteorological data from Honolulu International Airport (2008 – 2012) was used for the analysis.

Receptor Grid
Receptor grid spacing was set no greater than thirty (30) meters.
Dispersion Coefficient
Rural dispersion coefficient was selected.

Building Downwash
EPA's Building Profile Input Program (BPIP-PRIME) was used to evaluate downwash effects of nearby structures.

Ozone Limiting Method
The ozone limiting method was used for the one hour (1-hr) and annual NO_X to NO_2 conversion. An in-stack NO_2/NO_X ratio of 20% for the diesel engine generator was used for the model. The hourly ozone background concentrations were obtained from the Sand Island, Oahu, air monitoring station for the years 2008 through 2012.

Emission Rates and Stack Parameters
The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO_X	PM-10	PM-2.5	SO_2	Height (m)	Diameter (m)	Flow Rate (m^3/s)	Temp (°K)
1,093 bhp DEG	0.2961	0.7018	0.0254	0.0238	0.0014	4.57	0.203	2.11	706

Results
Although there is a fuel consumption limit for the diesel engine generator, the annual averaging periods assumed no annual limits. The table below shows the predicted ambient air quality impacts from the diesel engines should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Background[1] ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	SAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Compared to SAAQS / NAAQS
CO	1-hr	86.8	1718	1804.8	10000	40000	18.0%
	8-hr	47.4	1217	1264.4	5000	10000	25.3%
NO_2	1-hr	111.1	40.7	151.8	-	188	80.7%
	Annual	22.9	5	27.9	70	100	39.8%
PM-10	24-hr	3.4	40	43.4	150	150	28.9%
	Annual	1.2	16	17.2	50	-	34.3%
PM-2.5	24-hr	3.0	13.1	16.1	-	35	45.9%
	Annual	1.1	5.6	6.7	-	12	55.7%
SO_2	1-hr	0.4	30	30.4	-	196	15.5%
	3-hr	0.3	18	18.3	1300	1300	1.4%
	24-hr	0.2	10	10.2	365	365	2.8%
	Annual	0.1	4	4.1	80	80	5.1%

1. Background concentrations were taken from the 2012 Hawaii Air Quality Data from Kapolei. NO_2 (1-hr) and PM-2.5 (24-hr) are the 98th percentile averaged over 3 years. PM-2.5 (annual) is the annual mean averaged over 3 years.

SIGNIFICANT PERMIT CONDITIONS

1. Drum Mixer

    a. The drum mixer shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight, specification used oil, or any combination thereof.

    Reason: Fuel types proposed by the applicant.

    b. The total fuel consumption of the drum mixer shall not exceed 2,140,000 gallons in any rolling twelve-month (12-month) period.

    Reason: Limit emissions below major source thresholds.

    c. The permittee shall not discharge or cause the discharge into the atmosphere from the baghouse servicing the drum mixer/dryer, particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).

    Reason: 40 CFR 60, Subpart I, particulate matter limit.

2. Diesel Engine Generators

    a. The diesel engine generators shall be fired only on ultra-low sulfur diesel with a maximum sulfur content not to exceed 0.0015% by weight; and a minimum cetane index of forty (40) or maximum aromatic content of thirty-five (35) volume percent.

    Reason: 40 CFR 60, Subpart IIII, and 40 CFR 63, Subpart ZZZZ, fuel requirements.

b. The total combined fuel consumption of the 1,093 bhp diesel engine generator and 1,085 bhp emergency diesel engine generator shall not exceed 159,000 gallons in any rolling twelve-month (12-month) period.

Reason: Limit the annual emissions of NO_2 to show compliance with the previous air quality assessment.

3. Incorporate provisions of 40 CFR 63, Subpart ZZZZ for the 1,085 bhp emergency diesel engine generator including meeting the definition of an emergency stationary RICE, maintenance requirements, and installing a non-resettable hour meter.

Reason: 40 CFR 63, Subpart ZZZZ, requirements.

4. Hot Oil Heater

   a. The hot oil heater shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.
   b. The total fuel consumption of the hot oil heater shall not exceed 60,000 gallons in any rolling twelve-month (12-month) period.

   Reason: Fuel type proposed by the applicant, and to limit the annual emissions of NO_2 to show compliance with the previous air quality assessment.

5. Fugitive Emission Limits

   a. The permittee shall not cause to be discharged into the atmosphere from the RAP bin/crusher, fugitive emissions which exhibit greater than twelve (12) percent opacity.
   b. The permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors associated with the RAP bin/crusher, or from any other affected facility (as defined in 40 CFR §60.670 for hot mix asphalt facilities), fugitive emissions which exhibit greater than seven (7) percent opacity.

   Reason: 40 CFR 60, Subpart OOO, opacity limits.

CONCLUSION

Black Maui Rose, LLC has submitted an application for renewal and significant modification to install a 1,093 bhp diesel engine generator as the primary power source for its asphalt concrete plant. The existing 1,085 bhp diesel engine generator will revert to an emergency role. A baghouse is used to control PM emissions from the drum mixer. Water sprays will be used to control fugitive emissions. Potential emissions were based on the maximum rated capacities of the equipment. The ambient air quality impact analysis of the proposed 1,093 bhp diesel engine generator demonstrates compliance with State and National Ambient Air Quality Standards. Recommend issuance of the covered source permit subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Mark Saewong
December 19, 2014